

Record of the Shark *Carcharhinus longimanus*,
Accompanied by *Naucrates* and *Remora*,
from the East-Central Pacific¹

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IN THEIR MASTERLY TREATISE on the sharks of the western North Atlantic, Bigelow and Schroeder (1948: 354-364, figs. 64-65), in untangling some complicated synonymies, showed that the pelagic species commonly known as *Carcharhinus lamia* (Risso) cannot bear this name, but should be called *C. longimanus* (Poey). The literature is in such confusion that they were unable to verify the occurrence of this species in any ocean other than the Atlantic. It is therefore gratifying to obtain evidence promptly that it also inhabits the eastern tropical Pacific. This evidence is provided in the form of a photograph of an adult female specimen caught at Lat. 08° 16' N., Long. 125° 43' W., by A. J. Carsola and Jeremiah F. Black of the United States Navy Electronics Laboratory, on the ship "Serrano."³ This picture (Fig. 1) corresponds very closely with Bigelow and Schroeder's figure of an adult female, especially in the highly diagnostic features of the broadly rounded first dorsal fin, the markedly enlarged and round-tipped pectoral fin, the convex posterior border of the lower caudal lobe, the size and position of the anal and second dorsal fins, the extremely short snout in front of the nostrils, and the coloration. There can be virtually no doubt as to the identification.

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The lack of previous records from the eastern Pacific (see Beebe and Tee-Van, 1941, and Fowler, 1944) is explicable, for nearly all previous collecting has been near shore, and Bigelow and Schroeder indicate that this species is more strictly pelagic than any other in the Atlantic and is more definitely tropical than most of them. The new Pacific record station lies far off Mexico and east-southeast of the Hawaiian Islands.

The circumstances of the capture of the Pacific specimen are given in the log of the "Serrano," as follows:

27 May 1949, 1516 PST. A gray shark with white fin and tail tips was observed swimming around the ship about this time; three fish, each about one foot long and decorated by transverse black and silver stripes maintained formation with the shark, one being about a foot in front of him, another just below his body mid-section and another just above him. The shark was baited with a light hook and line, shot, and pulled onto deck (see picture).

The banded fish were of course *Naucrates ductor* (Linnaeus). Like the *Carcharhinus* that they were accompanying, the pilotfish are referable to a circumtropical species. It is true that Fowler (1905: 62-65, fig. 3) described the Pacific form as a distinct species, *Naucrates polysarcus*, partly on the basis of differences pointed out by Gill (1862: 440-441), but it now seems likely that the distinction was based on juvenile characters. The supposedly deeper body and the longer fins may well be characters of the young. Meek and Hildebrand (1925: 401) stated that "the

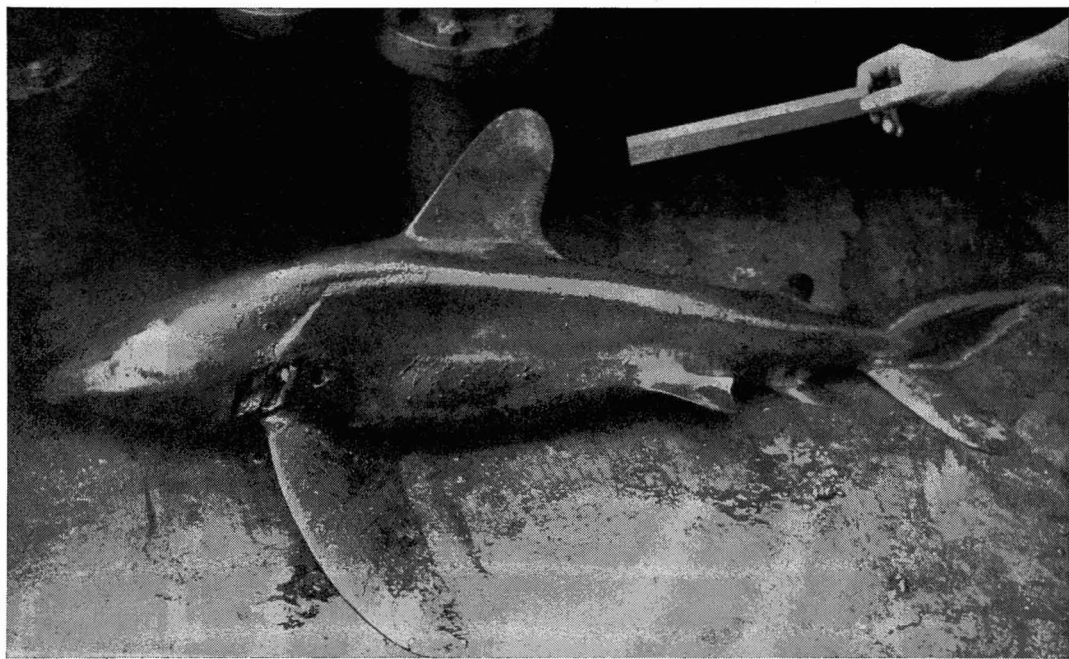


FIG. 1. Adult female of *Carcharbinus longimanus* (Poey), from the east-central Pacific. OFFICIAL PHOTOGRAPH, U. S. NAVY.

young appear to be deeper and more strongly compressed than the adult"; Wakiya (1924: 232, pl. 38, fig. 2), however, indicated that the young of "*Naucrates indicus*" are more slender than the adult. The original figure of *N. polysarcus* suggests that the extreme depth ascribed to the type may be attributed to its poor preservation. The different scale count, also emphasized by Fowler, is probably not significant, for the scales are too irregularly arranged to be counted precisely. Jordan and Starks (1907: 72) found that the supposed characters do not hold for a Pacific species, and Meek and Hildebrand, though failing to include *polysarcus* in their synonymy, refer Pacific material to *N. ductor*. Walford (1937: 66-68) likewise referred the Pacific form to *N. ductor* (and by mistake labeled the figure, which was taken from Jordan and Evermann, as "from Jordan and McGregor, 1898"). An adult specimen 325 mm. in standard length, recently received from off the Pacific coast of Mexico, has the slender form and the short

fins ascribed by Fowler to the Atlantic form. Recently, Fowler (1944: 423, 500) treated *polysarcus* as a subspecies of *ductor*.

From the shark there was taken a specimen, 105 mm. long, of another circumtropical species, *Remora remora* (Linnaeus). It agrees satisfactorily with material from southern California.

The specific integrity of such circumtropical pelagic fishes poses a problem in speciation, since widespread littoral types of the tropics, as well as most pantemperate types, in contrast, are ordinarily differentiated into allopatric subspecies or species, though their period of isolation has ordinarily been no longer, often briefer, than that of the land-separated populations of the tropical pelagic forms. The explanation seems to lie both in the uniformity of the tropical pelagic environment and in the relationship between the population structure and the rate of speciation. Large, widespread populations that are not disrupted into effective reproductive units

are now generally held, on the basis of Wright's analyses (1940*a*, *b*; 1942), to be little subject to differentiation.

ADDENDUM

After this manuscript was submitted for publication, Springer (1950: 2, 7-8) erected a distinct genus, *Pterolamia*, for the reception of *Carcharbinus longimanus* and, probably also, of *C. insularum* (Snyder), a species described from the Hawaiian Islands. He separated this nominal genus from *Eulamia* solely on the basis of the rounded tips of the dorsal and pectoral fins. Since the sharpness of these fins varies considerably and since the rounded tips seem to involve merely the retention of an embryonic feature, I am disinclined to accept the generic separation. Some other species of *Carcharbinus*, for example, *C. falci-formis* (Müller and Henle) as described by Bigelow and Schroeder (1948: 329-333, figs. 56-57), have the pectoral scarcely more pointed than in *C. longimanus* and have the dorsal distinctly though less broadly rounded. Nor does Springer's separation of *Eulamia* from *Carcharbinus* seem justified on the basis of the presence or absence of a middorsal ridge—a very tenuous distinction that depends in large part on the condition of preservation and that seems to be inconsistent, in some species at least.

That *Carcharbinus longimanus* may be common in the open equatorial Pacific is suggested by a picture in the recently published book *Kon-Tiki*, showing nine sharks caught in one day (Heyerdahl, 1950: lower figure of 2d pl. following p. 176; accompanying text apparently on pp. 205-206). So far as is obvious all sharks in this picture seem referable to the pelagic species under discussion. This identification is ventured on the basis of the showing of certain diagnostic characters, in particular the broadly rounded pectoral fins, much longer than the head; the far-forward position of the nostrils on the very short, strongly rounded, laterally angulated snout; and the plain coloration. The location of the

catch is not specified, but the context indicates that it was in the South Equatorial Current somewhere between Perú and the Tuamotu Archipelago.

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